



**UNITED STATES DEPARTMENT OF COMMERCE  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08,765,046	11/15/96	YABUTA	1 0279.1400500

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MERCHANT GOULD SMITH EDELL  
WELTER & SCHMIDT  
3100 NORWEST CENTER  
90 SOUTH SEVENTH STREET  
MINNEAPOLIS MN 55402-4131

EXAMINER	
VANUY, T	
ART UNIT	PAPER NUMBER
1754	9

DATE MAILED: 05/15/98

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

08/765046

Applicant(s)

TABATA ET AL.

Examiner

VANOY

Group Art Unit

1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- ☒ Responsive to communication(s) filed on 21 May 1998 and 28 Jan. 1998
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 2-8, 10-12, and 15-18 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☒ Claim(s) 6-8 is/are allowed.
- ☒ Claim(s) 2-5, 10-12 and 15-18 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
- ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 6
- ☐ Notice of References Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

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## DETAILED ACTION

### *Specification*

- oK a) It is suggested to insert the following before the first line of the specification --This application is a national stage filing under 35 U.S.C. 371 of PCT/JP96/00637 filed 14 March 1996.-- to set forth the related application.
- oK b) The following guidelines illustrate the preferred layout and content for patent applications. These guidelines are suggested for the applicant's use.

### Arrangement of the Specification

The following order or arrangement is preferred in framing the specification and, except for the reference to "Microfiche Appendix" and the drawings, each of the lettered items should appear in upper case, without underlining or bold type, as section headings. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) Title of the Invention.
- (b) Cross-References to Related Applications.
- (c) Statement Regarding Federally Sponsored Research or Development.
- (d) Reference to a "Microfiche Appendix" (see 37 CFR 1.96).
- (e) Background of the Invention.
  - 1. Field of the Invention.
  - 2. Description of the Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) Brief Summary of the Invention.
- (g) Brief Description of the Several Views of the Drawing(s).
- (h) Detailed Description of the Invention.
- (i) Claim or Claims (commencing on a separate sheet).
- (j) Abstract of the Disclosure (commencing on a separate sheet).
- (k) Drawings.
- (l) Sequence Listing (see 37 CFR 1.821-1.825).

The specification should be amended to at least include a "Brief Description of the Drawings".

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*Claim Rejections - 35 USC § 112*

Claims 2, 4, 10, 11, 12 and 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- (a) Claims 2 does not particularly point out and distinctly set forth what the "primary particles" are.
- (b) In claims 4, 10, 11, 12 and line 3 in claim 18, "type" renders the claim vague and indefinite in as much as it is not known what embraced and excluded by BEA type aluminosilicates or metallosilicates of the BEA type, etc...

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3, 4, 15, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Japan patent document no. 5-220,403 A.

The English abstract of the Japan patent document no. 5-220,403 A discloses both a catalyst and method for removing nitrogen oxides out of an oxygen-rich exhaust gas by contacting the nitrogen oxides contaminated exhaust gas with a beta zeolite that may be loaded with cobalt, as set forth in applicants' claims 15 and 16 as well as applicants' claims 3 and 4. From the disclosure set forth on pg. 3, col. 4 paragraph no. [0027] in the text of Japan patent document no. 5-220,403 A it appears that  $C_3H_6$  is the hydrocarbon that acts as a reducing agent for the nitrogen

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oxides, in a manner that fairly anticipates the use of hydrocarbons having two or larger number of carbons for reducing the NO<sub>x</sub> as set forth in applicants' claim 16 (particularly since pg. 13 lines 14-16 in the applicants' specification sets forth that the hydrocarbons used in the present invention refer to a wide variety of hydrocarbons, including olefins).

The limitations set forth in applicants' claims 15 and 16 calling for the metallosilicate to have a plurality of straight channels of oxygen 8-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions, individual members of said plurality of straight channels communicating with each other via micropores having a size of oxygen 8-ring or larger, the straight channels oriented in at least one of said at least two different dimensional directions having a size in section of oxygen 10-ring or larger are noted, but no material distinction is seen in as much as the catalyst that the applicants use appears to be the same cobalt containing beta zeolite described in the English abstract of the Japan patent document no. 5-220,403 A (please compare the cobalt containing beta zeolite described in Examples 1, 2 and 4 in the applicants' specification to the cobalt containing beta zeolite taught in the English abstract of the Japan patent document no. 5-220,403 A as well as note the disclosure set forth on pg. 6 lines 6-9 in the applicants' specification teaching that the applicants' most preferred form is BEA (i. e. beta) which has straight channels of oxygen 12-ring section in two different dimensional directions, the channels communicating with each other via 12-ring micropores).

Additionally, note that paragraph [0027] on pg. 3 in the Japan patent document no. 5-220,403 A discloses that the exhaust gas contains C<sub>3</sub>H<sub>6</sub> (but does not mention the presence of any

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other hydrocarbons), thus, in the process of Japan patent document no. 5-220,403, 90 percent or more of the hydrocarbons contained in the exhaust gas are hydrocarbons having four or fewer carbons, as set forth in applicants' claim 17.

Claims 3, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by U. K. patent application 2 238 784 A to Tamura et al.

The Tamura et al. application discloses both a catalyst and a process for removing nitrogen oxides out of an exhaust gas containing excess oxygen (please see pg. 2 lines 14-17 in this Tamura et al. application) by contacting the nitrogen oxides contaminated exhaust gas with a zeolite that may be of the ferrierite type that carries cobalt (please see Table 2 on pg. 10, particularly the cobalt "Metallic element supported" and "Kind of carrier" B (the ferrierite) in this Tamura et al. application), wherein the contact between the nitrogen oxide contaminated exhaust gas and the Co/zeolite is conducted in the presence of organic compounds (such as methane, ethane, propane, etc...) which act as reducing agents for the nitrogen oxides (please see the paragraph bridging pages 4 and 5 in this Tamura et al. application), as set forth in applicants' claims 3, 15 and 16.

The limitations set forth in applicants' claims 15 and 16 calling for the metallosilicate to have a plurality of straight channels of oxygen 8-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions, individual members of said plurality of straight channels communicating with each other via micropores having a size of

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oxygen 8-ring or larger, the straight channels oriented in at least one of said at least two different dimensional directions having a size in section of oxygen 10-ring or larger are noted, but no material distinction is seen in as much as the catalyst that the applicants use appears to be the same cobalt containing ferrierite zeolite described Table 2 on pg. 10 in the Tamura et al. application (please compare the cobalt containing ferrierite zeolite described in the second full paragraph on pg. 4 and the paragraph bridging pages 5 and 6 in the applicants' specification (note that "FER" refers to ferrierite) to the cobalt containing ferrierite zeolite taught in Table 2 on pg. 10 in the Tamura et al. application).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 148 USPQ 459, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or unobviousness.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

The person having "ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

Claims 2-5, 10 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan patent document no. 5-220,403 A.

The English abstract of the Japan patent document no. 5-220,403 A discloses both a catalyst and method for removing nitrogen oxides out of an oxygen-rich exhaust gas by contacting the nitrogen oxides contaminated exhaust gas with a beta zeolite that may be loaded with cobalt, as set forth in applicants' claims 15 and 16 as well as applicants' claims 3, 4 and 10. From the disclosure set forth on pg. 3, col. 4 paragraph no. [0027] in Japan patent document no. 5-220,403 A it appears that  $C_3H_6$  is the hydrocarbon that acts as a reducing agent for the nitrogen oxides, in a manner that fairly anticipates the use of hydrocarbons having two or larger number of carbons for reducing the NOx as set forth in applicants' claim 16 (particularly since pg. 13 lines 14-16 in



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the applicants' specification sets forth that the hydrocarbons used in the present invention refer to a wide variety of hydrocarbons, including olefins).

The limitations set forth in applicants' claims 15 and 16 calling for the metallosilicate to have a plurality of straight channels of oxygen 8-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions, individual members of said plurality of straight channels communicating with each other via micropores having a size of oxygen 8-ring or larger, the straight channels oriented in at least one of said at least two different dimensional directions having a size in section of oxygen 10-ring or larger are noted, but no material distinction is seen in as much as the catalyst that the applicants use appears to be the same cobalt containing beta zeolite described in the English abstract of the Japan patent document no. 5-220,403 A (please compare the cobalt containing beta zeolite described in Examples 1, 2 and 4 in the applicants' specification to the cobalt containing beta zeolite taught in the English abstract of the Japan patent document no. 5-220,403 A as well as note the disclosure set forth on pg. 6 lines 6-9 in the applicants' specification teaching that the applicants' most preferred form is BEA (i. e. beta) which has straight channels of oxygen 12-ring section in two different dimensional directions, the channels communicating with each other via 12-ring micropores).

Additionally, note that paragraph [0027] on pg. 3 in the Japan patent document no. 5-220,403 A discloses that the exhaust gas contains  $C_3H_6$  (but does not mention the presence of any other hydrocarbons), thus, in the process of Japan patent document no. 5-220,403 A, 90 percent

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or more of the hydrocarbons contained in the exhaust gas are hydrocarbons having four or fewer carbons, as set forth in applicants' claim 17.

The difference between the applicants' claims and this Japan patent document no. 5-220,403 A is that applicants' claim 2 calls for the metallosilicate to have an average diameter for the primary particles of 0.01 and 0.2 micrometers whereas Japan patent document no. 5-220,403 A does not appear to expressly describe the particle size of the primary particles, however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made because it is expected to be within the skill level of the person having ordinary skill in the art to readily determine the size of the particles and there is no evidence of record establishing that the size of the primary particles of the applicants' catalyst and the catalyst of the Japan patent document no. 5-220,403 A do, in fact, differ.

Note that the bottom portion of paragraph [0024] in the Japan patent document no. 5-220,403 A discloses a Si/Al ratio of 20 in a manner that is not seen to distinguish from the Si/Al ratios recited in applicants' claims 5 and 10.

The difference between the applicants' claims and the Japan patent document no. 5-220,403 A is that applicants' claims 5 and 10 set forth a Co/Al ratio of 0.2 to 0.6 whereas Japan patent document no. 5-220,403 A does not appear to expressly recite what the Co (or other catalytic metals)/Al ratio is, however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made because it is expected to be within the skill level of the person having ordinary skill in the art to readily determine the Co/Al

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ratio in the catalyst of Japan patent document no. 5-220,403 A and there is no evidence of record establishing that the Co/Al ratio of the applicants' catalyst and the catalyst of the Japan patent document no. 5-220,403 A do, in fact, differ.

Claims 3, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. K. patent application 2 238 784 A to Tamura et al.

The Tamura et al. application discloses both a catalyst and a process for removing nitrogen oxides out of an exhaust gas containing excess oxygen (please see pg. 2 lines 14-17 in this Tamura et al. application) by contacting the nitrogen oxides contaminated exhaust gas with a zeolite that may be of the ferrierite type that carries cobalt (please see Table 2 on pg. 10, particularly the cobalt "Metallic element supported" and "Kind of carrier" B (the ferrierite) in this Tamura et al. application), wherein the contact between the nitrogen oxide contaminated exhaust gas and the Co/zeolite is conducted in the presence of organic compounds (such as methane, ethane, propane, etc...) which act as reducing agents for the nitrogen oxides (please see the paragraph bridging pages 4 and 5 in this Tamura et al. application), as set forth in applicants' claims 3, 15 and 16.

The limitations set forth in applicants' claims 15 and 16 calling for the metallosilicate to have a plurality of straight channels of oxygen 8-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions, individual members of said plurality of straight channels communicating with each other via micropores having a size of

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oxygen 8-ring or larger, the straight channels oriented in at least one of said at least two different dimensional directions having a size in section of oxygen 10-ring or larger are noted, but no material distinction is seen in as much as the catalyst that the applicants use appears to be the same cobalt containing ferrierite zeolite described Table 2 on pg. 10 in the Tamura et al. application (please compare the cobalt containing ferrierite zeolite described in the second full paragraph on pg. 4 and the paragraph bridging pages 5 and 6 in the applicants' specification (note that "FER" refers to ferrierite) to the cobalt containing ferrierite zeolite taught in Table 2 on pg. 10 in the Tamura et al. application).

The difference between the applicants' claims and this Tamura et al. application is that applicants' claims 15 and 16 call for the metallosilicate to have a plurality of straight channels of oxygen 8-ring or larger in section, said plurality of straight channels being oriented in at least two different dimensional directions, etc..., however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made because a review of the applicants' specification on pages 4-6 and Table 2 on pg. 10 in the Tamura et al. application reveals that both the applicants' and Tamura et al. are using the same catalyst. Therefore, the descriptive limitations set forth in applicants' claims 15 and 16 are not seen to impart a material difference between the catalysts.

Claims 6, 7, 8, 11, 12 and 18 have not been rejected under either 35 U.S.C. 102 or 35 U.S.C. 103 because there is no suggestion or teaching in the references of record to modify the

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zeolite catalysts of either Japan patent document no. 5-220,403 A or U. K. patent application no. 2 238 784 A to include either or both of the boron and titanium set forth in applicants' claims 6, 7, 8, 11, 12 and 18.

*Response to Arguments*

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication should be directed to Timothy C. Vanoy at telephone number (703) 308- 2540.

Timothy C. Vanoy/tcv

  
Timothy C. Vanoy

12 June 1998

Patent Examiner

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